

**GOVERNMENT OF INDIA
EARTH SCIENCES
LOK SABHA**

UNSTARRED QUESTION NO:4088

ANSWERED ON:22.04.2008

IMPACT OF GLOBAL WARMING ON AGRICULTURE

Manoj Dr. K.S.

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether the Government has conducted any study on the impact of global warming on agriculture production in the country;
- (b) if so, the details thereof;
- (c) whether any assessment has been made by the Government with regard to food security in the country;
- (d) if so, the details thereof; and
- (e) the steps taken/proposed to be taken by the Government in this regard;

Answer

MINISTER OF SCIENCE AND TECHNOLOGY AND MINISTER OF EARTH SCIENCES (SHRI KAPIL SIBAL)

(a) Yes Sir.

(b) – (d) Study on the impact of global warming and climate change on agricultural production in the country has been carried out by Ministry of Earth Sciences. Projected climate change scenarios have been used as inputs to the crop simulation models for assessing the impacts of possible climate change on growth, development and yield of crops in some regions of the country. Results of these preliminary studies indicate that the future impacts of climate change on agriculture leads to increase in CO₂ concentration which is likely to be beneficial to several crops. But due to projected warming and increased rainfall variability the crop yields are going to be negatively impacted.

Results of studies on rice crop indicate that the rice yields in India may be favorably impacted due to increase in CO₂ concentration of the atmosphere. Temperature Rise adversely impacts the crop yield due to shortening of crop duration. The favourable impact of CO₂ is nullified due to increase in temperature by 20C. Rise in temperature beyond 20C may adversely impact the crop yield.

Simulation experiments under projected climate change scenarios for wheat crop indicate that an increase of 30C rise in temperature cancelled out the positive effect of elevated CO₂. The adverse impacts of likely water shortage on wheat crops would be minimized to a certain extent under elevated CO₂ levels.

Simulation experiments Soybean crop in Central India showed that a 30C rise in surface air temperature almost cancels out the positive effects of doubling of carbon dioxide concentration resulting in reducing the total duration of the crop (and hence productivity) by inducing early flowering and shortening the grain fill period. Soybean crops in Central India are found to be more vulnerable to increase in maximum temperature than in minimum temperature.

(e) Ministry of Earth Sciences has proposed to set up a Centre for Climate change at Pune that will do an in-depth analysis on impact studies for different sectors due to varied climate change.